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AN EVALUATION OF THE ROLE OF SITE "A" IN HALTON'S SOLID WASTE MANAGEMENT STRATEGY

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REGIONAL MUNICIPALITY OF HALTON

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1. PREAMBLE

The purpose of this report is to determine if there is a role for Site "A" (The National Sewer Pipe Site) in the long term Solid Waste Management Strategy for the Regional Municipality of Halton. The role of Site "A" in a 1, 2 and 4 landfill site system was evaluated. Following this, the second purpose was to determine which landfill site system appeared most appropriate.

This report was initiated following Regional Council's consideration of C.A.O. Report 97/81 regarding the National Sewer Pipe (N.S.P.) Landfill Site Proposal wherein Council was advised that three questions needed answering:

1. Can the proposed N.S.P. landfill site be made hydrogeologically safe and secure?

2. What is the role of the N.S.P. site in Halton's long term Solid Waste Management Strategy?

3. If there is a role, what kind of agreement would be appropriate between the Region and N.S.P.?

Since Dr. Cherry's hydrogeological report addressed Question 1, the next step was to prepare this report to address Question 2.

Only the landfilling component of the Solid Waste Management Strategy was considered in the evaluation. Resource utilization was assumed to be in place in 1990 (see Section 3, Assumptions).

The Landfill Alternatives Task Force is composed of H. Wong, P. Attack, J. Corbett and J. Stewart (and later D. Birkett) from the Departments of Planning and Development, Public Works and Finance. The Landfill Alternatives Steering Committee consists of D. Y. Perlin, G. Lawson, R. Moore and R. Mohammed. The Region engaged M. M. Dillon Ltd., Consulting Engineers and Planners, to provide technical background data. The interpretation of the Dillon data, the evaluation and the conclusions are the responsibility of the Task Force.

The Task Force investigated the seven alternatives provided by Regional Council; developed six criteria to measure the

performance of each alternative; made certain assumptions to allow the exercise to be completed within a short time frame; and completed an evaluation matrix of the alternatives versus the criteria with the objective of establishing the best alternative for each criterion.

The report evaluates the alternatives listed which pertain only to the role of Site "A" and this evaluation of alternatives is not sufficiently complete, in the opinion of the Task Force, to satisfy Ontario Environmental Assessment Act requirements.

2. Description of Alternatives

(I) Site "F" alone; no need for the National Sewer Pipe Proposal at all. The Region would oppose National Sewer Pipe.

(II) Site "F" as the Regional project; no position one way or the other on the National Sewer Pipe Project. Burlington waste would go to National Sewer Pipe.

(III) National Sewer Pipe project alone by way of agreement between the Region and National Sewer Pipe with the dropping of Site "F".

(IV) Landfill on the National Sewer Pipe property but owned by the Region and either operated by the Region, or operated on behalf of the Region by way of an agreement with National Sewer Pipe.

(V) Both Site "F" and the National Sewer Pipe Proposal, by agreement with National Sewer Pipe, as complementary sites.

(VI) Both Site "F" and National Sewer Pipe, with an agreement with National Sewer Pipe, but having the site continuous instead of concurrent. National Sewer Pipe would go first.

(VII) Examination of National Sewer Pipe, Site "F" and two other locations in Halton, Site "J" in Halton Hills and Site "D" in Oakville (four sites, one in each Area Municipality).

3. Major Assumptions

a. Landfill site or sites in Halton will be required to take all the Region's solid waste from 1985 (when the new sites being considered are implemented) to 1990.

b. From 1990 until the year 2010, the landfill site or sites will only take approximately 30% of the Region's solid waste (the remainder will be recovered by a resource utilization facility).

c. The evaluation will end in the year 2010 with a salvage value beyond that date being taken into account by means of an average cost per ton approach. (The total cost over the life span of the site was divided by the capacity of the site to obtain the average cost per ton.)

d. For the National Sewer Pipe proposal, it was assumed that the Region would not buy the shale from the property but National Sewer Pipe would continue to extract and sell the shale even if the Region became the owner of the property.

e. All assumptions will involve a mutually satisfactory agreement between National Sewer Pipe and the Region with the exception of Alternatives I and II.

f. For Alternative I, there will never be a National Sewer Pipe Landfill Site, and another landfill site similar to Site "F" (but in a different location) will be developed to carry the Region through to the year 2010.

g. For Alternatives III and IV there will never be a Site "F".

h. For all alternatives with the exception of Alternative I and IV, National Sewer Pipe will be a private operation.

4. Description of Main Factors Considered for Each Performance Criterion and Results

The evaluation matrix provided in Figure 1 indicates the rating for each alternative versus each criterion, and the shading indicates the best alternative for each criteria in the opinion of the Task Force. Lifespan after 1985 is shown at the bottom of the matrix and was considered important since some options have a far longer lifespan than others.

In evaluating the alternatives many factors were considered for each performance criterion. The Task Force members examined the Dillon data, which was both qualitative and quantitative, and decided to rate the alternatives good, fair or poor based on the experience of the members.

Criterion 1 - Costs

M. M. Dillon provided estimated costs for each alternative for property, construction, design, financing, operation, transportation and approvals. The main factors considered were:

a. Economies of scale (fewer number of sites means less cost).

b. The profits from a shale recovery operation.

The average cost per ton figures indicated that Alternative VII was the worst scenario in terms of costs while Alternative I appeared to be the best.

Criterion 2 - Ability to Achieve Resource Utilization

The main factors considered were:

a. Increased landfill capacity will adversely affect the will to implement resource utilization.

b. Private ownership will mean less control over resource utilization of the Region's solid waste.

c. An agreement with N.S.P. could lessen the effect of the ownership factor.

As a result of considering the above, Alternative I appeared to be the best.

Criterion 3 - Environmental Impact

The major factors considered were:

a. The greater the number of landfill sites involved the greater the environmental risk.

b. Extensive overburden material on site, for the purpose of containing and attenuating leachate, is a major factor in reducing the environmental risk.

c. Hydrogeological studies of Site "A" and Site "F" indicated that both sites can be made environmentally safe, but Site "F" was considered superior on the basis of additional overburden.

As a result of the above considerations, Alternative I was considered the best option.

Criterion 4 - Social Impact

The major factors considered were:

a. The existing conditions on and near the site.

b. The local people's perception of any change in their neighbourhood.

c. An incremental change would be preferrable to a big change for considerations of truck traffic, noise, dust etc.

d. Public ownership will provide more assurance to the public.

e. The number of sites involved.

As a result of the above, Alternative IV was considered to be the best option.

Criterion 5 - Timing and Reliability

Timing and reliability were each considered separately because in some cases the best timing resulted in the least reliable system. For timing, only approval timing was considered and it was assumed that one site would receive a faster approval than several sites, and that approval under

the Environmental Protection Act (private sites only require EPA approval) would proceed at only a slightly faster rate than approval under the Environmental Assessment Act. The difference between the two Acts was tempered by the possibility that a comprehensive agreement between a municipality and a private operator may bring the proposal under the Environmental Assessment Act.

For reliability, the major factors were:

a. Total lifespan of the alternative (the longer the better).

b. Public versus private ownership (public more reliable).

c. The number of sites involved (the greater the better).

As shown in Figure 1 in parenthesis, timing and reliability were rated separately and then combined for an overall rating. As a result of the above, Alternative V was considered the best because 2 sites are involved; the lifespan is above average; one site is public and an agreement is provided for Site "A".

Criterion 6 - Long Term Planning

The major factors considered were:

a. The existing use on the site and surrounding the site.

b. The compatibility of the proposed end use with the surrounding land use.

c. The number of acres removed from agricultural production and the length of time removed (largely dependent on number of sites).

After considering the above, alternative IV appeared to be the best option.

5. Description of Scoring

Section 4 describes a qualitative exercise to compare the various alternatives based on a rating system of "good", "fair" and "poor" culminating in the results in Figure I. To further evaluate the various alternatives, a scoring system was used which is illustrated in Figure II. Based on the experience of the Task Force members, the various alternatives were placed along a scale from 0 to 10 for each performance criteria. The best alternative was given a score of 10 and the worst alternative was given a score of 0. Figure II shows the total score for each alternative after the criteria were weighted according to the following weights that represent the Task Force's perception of the relative importance of the criteria:

Criterion 1 - Costs	25%
Criterion 2 - Resource Recovery	10%
Criterion 3 - Environmental Impacts	25%
Criterion 4 - Social Impacts	15%
Criterion 5 - Timing (10%) and Reliability (5%)	15%
Criterion 6 - Long Term Planning	10%

6. Conclusions

a. As a result of the evaluation exercise, the Task Force concluded that there does appear to be a role for Site "A" in Halton's long term Solid Waste Management Strategy.

b. Alternative I (Site "F" alone) was rated "good" for the criteria of cost, ability to achieve resource utilization and environmental impact. Social impact was rated "fair" mainly due to the disruption to the quiet rural environment. The timing criterion was rated "fair" due to the Environmental Assessment Act approval requirement, while the reliability criterion was rated "fair" since public ownership would increase reliability while the short lifespan would mitigate against a highly reliable system. The long term planning criterion was rated "fair" since there is only one site involved even though the existing uses are not compatible. As a result of the above, Alternative I is considered to still be a viable option and should receive further consideration.

c. Alternative II (Site "F" and Site "A" with no agreement) was rated "fair" for all criteria. With a two-site system the cost increased; the ability to achieve resource utilization was reduced; the environmental impact was increased due to the larger number of sites; social impact was increased for the same reason; reliability was increased but timing approvals mitigated against this benefit; and for the long-term planning criterion, the number of sites decreased the compatibility with surrounding uses. As a result of the above, Alternative II should not be given further consideration.

d. Alternative III (Site "A" alone) was rated "good" for the cost criterion following a financial analysis; ability to achieve resource utilization was rated "poor" due to the lack of public ownership; environmental impact was rated "good" based on existing studies; social impact was rated "good" due to the exisitng extractive operation in neighboring industrial uses; timing was rated "fair" and reliability "poor" since it would be in private ownership; and the long-term planning criterion was rated "good" since existing and surrounding uses are very compatible. As

a result of the above, Alternative III should receive further consideration.

e. Alternative IV (Site "A" alone but publicly owned) received the same ratings as the above Alternative III for the same reasons for every criterion with the exception of criterion 2 - ability to achieve resource utilization. This criterion was rated "good" instead of "poor" bacause public ownership would give the Region the control necessary to implement its own resource utilization program. As a result of the above, Alternative IV should receive further consideration.

f. Alternative V (Site "F" and Site "A" but with an agreement) received a "fair" rating for cost due to the expense of a two-site system; a "fair" rating for ability to achieve resource utilization since increased capacity will reduce willingness to utilize resources; a "fair" rating for environmental impact since two sites are involved; a "fair" rating for social impact also since two sites are involved; a "good" rating for timing and reliability since the agreement and the number of sites will both greatly increase reliability of the system; and a "fair" for long-term planning since two sites means more conflicts in land use. As a result of the above, Alternative V should not receive further consideration.

g) Alternative VI (Site "A" then Site "F") received a "good" rating for cost based on the financial analysis; a "poor" rating for ability to achieve resource utilization since the private operation would be in effect for 25 years; a "good" rating for environmental impact based on existing studies; a "good" rating for social impact due to the lack of housing near Site "A"; a "fair" rating for timing and a "poor" rating for reliability due to the private ownership factor; and a "good" rating for long term planning due to the compatibility of existing uses on and adjacent to Site "A". As a result of the above, Alternative VI should receive further consideration.

h) For Alternative VII (Sites "A", "F", "E", and "J") all criteria were rated "poor" with the exception of criterion five, since the number of sites increased the costs, the environmental impact and the social impact, while decreasing the Region's ability to acheive

FIGURE I

CRITERIA	ALTERNATIVES I F ALONE	II F AND A NO AGRMT	III A ALONE BY AGRMT	IV A ALONE PUBLIC	V F AND A BY AGRMT	VI A THEN F	VII A+F+D+J
1. COSTS	good	fair	good	good	fair	good	poor
2. ABILITY TO ACHIEVE RESOURCE UTILIZATION	good	fair	poor	good	fair	poor	poor
3. ENVIRON-MENTAL IMPACT	good	fair	good	good	fair	good	poor
4. SOCIAL IMPACT	fair	fair	good	good	fair	good	poor
5. TIMING AND RELIABILITY (Timing, Reliability)	fair (f,f)	fair (f,f)	fair (f,p)	fair (f,f)	good (f,g)	fair (f,p)	fair (p,g)
6. LONG TERM PLANNING	fair	fair	good	good	fair	good	poor
LIFE SPAN (Beyond 1985, in years)	F 13 +Another suitable site	F 27 A 60	A 25	A 25	F 27 A 60	A 25 + F 16	F 175 A 60 D 43 J 80

resource utilization due to the enormous landfill capacity available. Long term planning was rated "poor" since there would be a great increase in the number of acres removed from agriculture and conflicts with surrounding land uses on all four sites. Timing and reliability was rated "fair". Although timing approvals would be slow the system would be extremely reliable since it would last for a great length of time. As a result of the above, Alternative VII should not receive further consideration.

i) In summary, Alternatives I, III, IV and VI should receive further consideration.

Alternatives II, V and VII should not receive further consideration.

FIGURE II

CRITERIA	ALTERNATIVES I F ALONE	II F AND A NO AGRMT	III A ALONE BY AGRMT	IV A ALONE PUBLIC	V F AND A BY AGRMT	VI A THEN F	VII A+F+D+J
1. COSTS	10.0	5.5	6.5	6.5	5.5	6.0	0.0
2. ABILITY TO ACHIEVE RESOURCE UTILIZATION	10.0	3.0	1.0	9.0	4.0	1.0	0.0
3. ENVIRON-MENTAL IMPACT	10.0	4.5	8.5	9.0	5.5	8.5	0 0
4. SOCIAL IMPACT	3.5	5.5	9.0	10.0	6.5	9.0	0.0
5. TIMING AND RELIABILITY	3.5 3.5	4.0 4.5	6.5 0.0	4.5 4.0	5.5 7.5	6.0 1.0	0.0 10.0
6. LONG TERM PLANNING	3.5	2.5	7.5	10.0	3.0	8.0	0.0
TOTAL SCORE WEIGHTED	74.0	45.0	66.0	79.3	53.5	65.3	5.0